

AMENDMENT UNDER 37 C.F.R. § 1.111
Application No.: 10/600,831
Atty Docket No.: Q76239

REMARKS

The Office Action of October 13, 2004 has been received and its contents carefully considered.

Claims 1 to 10 are all the claims pending in the application, prior to the present amendment.

Applicants have added new dependent claims 11 to 13. Support for claim 11 can be found, for example, at page 14 of the specification. Support for claim 12 can be found at page 24, line 15 to page 25, line 5 of the specification. Support for claim 13 can be found at page 25, lines 6 to 8.

Claims 1 and 6 to 10 have been rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent 5,618,338 to Kurabayashi et al.

Applicants submit that Kurabayashi et al do not disclose or render obvious the subject matter of claims 1 and 6 to 10 as amended above and, accordingly, request withdrawal of this rejection.

The present invention as set forth in claim 1 as amended above is directed to an ink set comprising at least four kinds of inks including colorless ink, wherein at least one ink of the at least four kinds of inks contains a betaine compound and a soluble dye.

Thus, applicants have amended claim 1 to state that the at least one ink contains a betaine compound and a soluble dye. The ink set of the present invention can effectively prevent blotting of ink by providing an ink containing a betaine compound and a soluble dye.

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The Examiner states that Kurabayashi et al disclose all of the recitations of the above claims. The Examiner identifies particular passages in Kurabayashi et al that, according to the Examiner, satisfy the recitation of the present claims.

The Examiner especially states that Kurabayashi et al disclose an inkjet recording method and apparatus using an ink set, including a four color ink and one colorless ink. The Examiner refers to Figure 8 and column 6, lines 38 to 41 for such a disclosure.

In addition, the Examiner states that the color ink and the colorless ink contain a betaine compound, as disclosed at column 4, lines 65 to 66.

Applicants submit that Kurabayashi et al do not disclose or render obvious the presently claimed invention because Kurabayashi et al do not disclose an ink containing a betaine compound and a soluble dye.

Kurabayashi et al describe a “liquid composition” according to the Kurabayashi et al invention which is preferably colorless, or may have a light color if that color does not change the tone of the inks of various colors when mixed with those inks on the recording medium.

The liquid composition according to the invention of Kurabayashi et al is a composition which contains at least a cationic substance which may be an amphoteric surfactant, including a betaine, and finely ground cellulose. In the method of Kurabayashi et al, this liquid composition is first applied to a recording medium, and then colored inks from an ink set are applied to the recording medium so that the liquid composition is mixed with the ink on the recording medium. See column 3, lines 40 to 54 of Kurabayashi et al.

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The cationic substance of Kurabayashi et al interacts with an anionic dye (i.e., a soluble dye) in the colored inks on the recording medium, so that the cationic substance and the soluble dye aggregates, as described at column 3, lines 40 to 54 of Kurabayashi et al. That is, Kurabayashi et al suggest that when an ink contains an cationic substance together with a soluble dye, there is a possibility that the cationic substance and the soluble dye aggregates or separates in the ink. This aggregation or separation in the ink is not preferable, since this aggregation or separation has negative effects on the discharge property of the ink and the recorded image property.

The inventors of the present invention found that the aggregation or separation rarely happened in the ink of the present invention by using a betaine compound among cationic substances, and that the ink of the present invention was able to effectively be prevented from blotting.

In view of the above, applicants submit that Kurabayashi et al do not disclose or suggest the subject matter of claims 1 and 6 to 10, or of new claims 11 to 13, and, accordingly, request withdrawal of this rejection.

Claims 2 to 5 have been rejected under 35 U.S.C. § 103(a) as obvious over Kurabayashi et al in view of EP '272 to Ma et al, which was cited in the Information Disclosure Statement filed by applicants on September 25, 2003.

Applicants submit that Kurabayashi et al and Ma et al do not disclose or render obvious the subject matter of claims 2 to 5 and, accordingly request withdrawal of this rejection

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The Examiner states that Kurabayashi et al disclose all of the recitations of claims 2 to 5, except that Kurabayashi et al do not disclose that the betaine compound is represented by Formula (1) of claim 2.

The Examiner relies on the teachings of EP '272 to Ma et al for the disclosure of the use of such a betaine compound in an ink set. The Examiner argues that it would have been obvious to employ the betaine compound of EP '272 in the ink set of Kurabayashi et al.

Claims 2 to 5 depend from claim 1. Accordingly, applicants submit that they are patentable over Kurabayashi et al for the same reasons as set forth above in connection with the rejection of claim 1 over Kurabayashi et al.

Further, the ink according to the invention of EP '272 is characterized in that an insoluble colorant is used in the ink. See page 2, paragraph [0004] and page 3, paragraphs [0011] to [0016] of EP '272. Applicants submit that the ink according to claims 2 to 5 is clearly distinguished from the ink of EP '272, since EP '272 does not disclose an ink in which a betaine compound and a soluble dye are used in combination.

EP '272 states that a betaine can be used as a surfactant in a colored ink containing an insoluble colorant. EP '272, however, does not contain a specific working Example showing the use of a betaine. Examples 4 and 5 of EP '572 employed a Basic Violet 11 dye and Example 6 employed an anionic dye Acid Red 52. These dyes are water-soluble. However, a betaine compound is not used in Examples 4, 5 and 6 of EP '272, and the water-soluble dyes are merely used in addition to the insoluble colorant. As mentioned above, EP '272 does not disclose a specific working Example showing the use of a betaine compound.

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EP '272 states in paragraph [0015] that dispersed dyes may be used as the insoluble colorant and become soluble at some point in the printing process. However, the "soluble dye" of the present invention is a dye that is soluble in an ink composition (i.e., a dye soluble before the printing process), and is clearly distinguished from the insoluble colorants of EP '272 in this point.

In addition, applicants submit that one of ordinary skill in the art would have no motivation to combine Kurabayashi et al with EP '272, since Kurabayashi et al suggest that when an ink contains an cationic substance together with a soluble dye, there is a possibility that the cationic substance and the soluble dye aggregates or separates in the ink. This aggregation or separation in the ink is not preferable, since this aggregation or separation has negative effects on the discharge property of the ink and the recorded image property.

In view of the above, applicants submit that Kurabayashi et al and Ma et al do not disclose or render obvious the subject matter of claims 2 to 5, or of new claims 11 to 13, and, accordingly, request withdrawal of this rejection.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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Respectfully submitted,

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